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# SEVENTH CONTRIBUTION TO A KNOWLEDGE OF CERTAIN LITTLE-KNOWN APHIDIDÆ.\*

BY CLARENCE M. WEED.

The observations upon which the present paper is based were made during the Autumn of 1890 at Columbus, Ohio, and the Autumns of 1891 and 1892 at Hanover, N. H. The drawings illustrating this paper were made by Miss Freda Detmers, under my direction, and the photograph for Plate VII was kindly taken for me by Dr. H. H. Lamson.

## ***Siphocoryne salicis* Monell.**

This species was abundant at Hanover on the leaves and twigs of willow during October and November, 1892. As the leaves fell the sexed forms congregated upon the twigs where the oviparous females deposited their eggs in the crevices about the buds. These eggs are nearly as long as those of *Melanoxanthus salicis*, in connection with which they often occur, but they are much more slender.

*Winged Male*.—Body 2 mm. long; 0.8 mm. wide; head to tip of folded wings, 4 mm.; antennæ, 1.1 mm.; wing expanse, 7 mm. Head blackish; prothorax yellowish or greenish, with a large dusky patch covering most of dorsum; meso- and metathorax blackish with a little yellow about base of coxæ. Rostrum reaching second coxæ, yellowish brown, with a dusky tip. Eyes reddish; post-ocular tubercles not very prominent. Abdomen yellowish green, often light green, with dusky dots on margins and large transverse dusky spots on terga of anterior segments; tip of abdomen dusky. Antennæ black, third joint longest, a little longer than iv plus v; joints iv, v and basal part of vi subequal; apical part of vi a little longer than its basal portion, and only about half as long as third joint. Wing membrane a trifle dusky because rather thickly furnished with very minute scale-like objects. Tegulæ and wing insertions brownish yellow; veins and stigma dusky, especially away from body; cornicles and cauda blackish, former long and reaching to end of abdomen. A small, acute tubercle on dorsum of penultimate abdominal segment; much less conspicuous than similar tubercle in oviparous female. Legs yellowish brown, with tips of femora and tibiæ and all of tarsi blackish; hind pair darker than the others.

Described from several living specimens on *Salix*, Nov. 10, 1892; some seen in copula with the oviparous form.

*Oviparous Female*.—Body 2 mm. long; 1 mm. wide; antennæ 0.7 mm. General color varying from apple green to ochraceous-rufous; oftenest approaching latter, and usually being colored like the buds near which the specimen is stationed,

\* The previous contributions to this series have been published as follows: first, "Psyche," vol. v, pp. 123-134; second, "Psyche," vol. v, pp. 208-210; third, Bulletin Ohio Agricultural Experiment Station, Second Series, vol. i, pp. 148-152; fourth, Bulletin Ohio Agricultural Experiment Station, Technical Series, vol. i, pp. 111-120; fifth, "Insect Life," vol. iii, pp. 285-293; sixth, Bull. Ill. St. Lab. Nat. Hist. v, iii, pp. 207-214.

probably because of coloring matter in sap consumed. Dorsum of head usually nearly covered with two large, subquadrangular, dusky patches, which sometimes run together. Dorsum of prothorax with three more or less distinct small spots arranged in a triangle near margins; and one transverse spot on each side of dorso-meson near front margin; rest of dorsum with a longitudinal marginal and submarginal row of indented blackish dots on each side. In the green specimens the dorsum shows two longitudinal rows of large, transverse, quadrangular, slightly dusky patches. Antennæ short, nearly unicolorous with head or else light wood-brown, from base to apical fourth of third joint; from there to tip dusky, first and second joint normal; third longest, about equal to iv plus v, which are subequal; basal part of joint vi a little longer than v, and same length as its apical portion. The median portion of the tergum of the penultimate abdominal segment produced into a prominent, subconical, truncate tubercle, projecting caudad; this is generally dusky at tip. Eyes dark, post-ocular tubercle not very prominent; cornicles dusky, especially at tip; more than half as long as antenæ; slightly expanding toward tip, then suddenly contracting and ending with a flange; cauda well developed, dusky at tip; rostrum short, barely reaching second coxæ, dusky at tip. Legs light wood-brown, with tips of tibiæ and all of tarsi of first two pairs, and all of tibiæ and tarsi of hind pair dusky.

Described from many specimens on *Salix*, at Hanover, N. H., Nov. 10, 1892. One had three eggs in abdomen.

*Egg*.—Length 0.8 mm. Suboval, one side (that by which attached) usually being nearly straight, and the other much curved; yellowish when first extruded, but soon changing to shining black. Deposited in crevices between buds and twigs.

Described from many specimens on *Salix*, Nov. 10, 1892.

### ***Aphis euonymi*.**

In the Autumn of 1890 the oviparous forms of *Aphis euonymi* were common on the leaves and twigs of the burning bush (*Euonymus atropurpureus*) in the vicinity of Columbus, Ohio.

*Oviparous Female*.—Length 1.5 mm.; width across abdomen 0.6 mm.; antennæ, 0.7 mm. Body obovate, tapering to a point; a row of indentations near outer

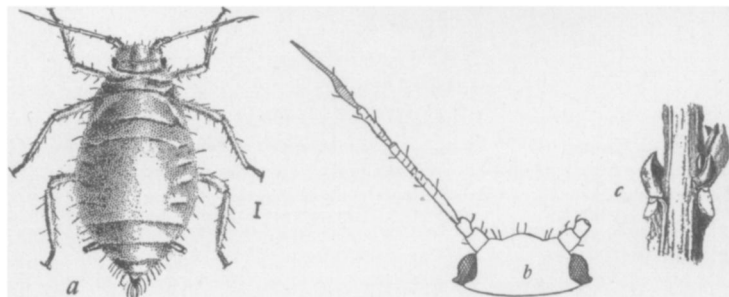


Fig. 1.—*Aphis euonymi*: a, oviparous female, magnified; b, head and antenna of same, greatly magnified; c, eggs on twig, magnified.

end of margin. Color deep, dark brown, bronzy in some lights; antennæ dusky, except proximal half of third joint, which is whitish; first two pairs of legs with coxæ unicolorous with body, femora and tibiæ whitish or yellowish, with

dusky tips, and tarsi dusky; posterior pair dusky throughout. Prothorax with lateral tubercles. Antennæ 5-jointed; joint iii long, longer than iv plus the basal part of v; terminal part of v quite long, with several very small pores; v imbricated; cornicles short, cylindrical concolorous with body; cauda well developed, pilose.

*Egg* 0.5 mm. long. Oval, shining black, though green when first laid. Deposited on the twigs about the buds.

### **Aphis cornifoliae.**

On Nov. 1, 1892, I found numbers of this species on the leaves and branches of the common Red Osier Dogwood (*Cornus stolonifera*). The forms present were the winged viviparous females (return migrants), winged males, oviparous females and eggs. Each of these forms corresponded precisely with the descriptions of similar forms taken in Illinois in 1887 recorded in the first of this series of contributions.\* The conditions were also the same as regards the establishing the colonies of the oviparous females by the winged return migrants and the flying in of the males. No indications were seen of the development of either of these winged forms on *Cornus*, and I have no doubt that the species passes the Summer on some other plant.

### **Aphis mali** Linn.

Observations on the Autumn history of this species in New Hampshire showed a condition of things exactly similar to what I have found in Michigan, Illinois and Ohio during the last ten years. Early in September the previously unoccupied apple leaves begin to be colonized by winged return migrants that give birth to the oviparous females. Later the males fly in. The eggs are deposited on the twigs and buds.

*Oviparous Female*.—Body 1.4 mm. long; 0.7 mm. wide; antennæ 0.6 mm. long. Commonest color of fully matured specimens chromium green (Ridg. x, 12), but some specimens light apple green (Ridg. x, 20, but lighter) and more rarely a brown form occurs. In the green specimens the antennæ and legs are dusky, especially toward their tips; and there is a more or less distinct yellowish brown patch at the base of the cornicles. Cornicles rather short, slightly flanged at tip; darker than body. Third joint of antennæ a little more than twice as long as fourth; basal part of fifth distinctly shorter than fourth; apical part of fifth distinctly longer than third. Rostrum reaching as far as anterior margin of posterior coxæ; dusky at tip. Style short, dusky.

Described from many living specimens ovipositing on twigs of *Pyrus malus* at Hanover, N. H., Nov. 7, 1892.

*Winged Viviparous Female. Return Migrant*.—Body 2 mm. long; head to tip of folded wings, 4.2 mm.; antennæ, 1.2 mm.; wing expanse, 1 mm. Head and thorax black, with connecting membrane greenish; abdomen apple-green or oil-green, usually latter, with marginal rows of black spots on dorsum. In older specimens that have nearly finished bearing young, the abdomen may become

\* Psyche, vol. v, pp. 123-125.

almost black. Legs black, except bases of femora, which are brown; tegulæ oil-green; wing insertions yellowish; veins and stigma yellowish brown, lighter near body; stigma darker than the veins, sometimes dusky. Antennæ on slight frontal tubercles, black; joint iii equal to iv plus v; iv a little longer than v; basal part of vi short, a little more than half as long as v; distal part of vi distinctly longer than iii, with three minute spines at tip, the inner longest and recurved. Cornicles dusky, of medium length, very slightly swollen from base outward, flanged at tip. Style well developed, sides parallel till toward tip, where they contract to meet in a right angle.

Described from many living specimens on *Pyrus malus*, Nov. 4, 1892, Hanover, N. H.

**Melanoxanthus salicti** (Harr.).

This species is very abundant in Hanover, often almost covering large trees. Its habits and appearance here are precisely like the species as I found it in Ohio, and described in previous contributions of this series. Large numbers of the wingless forms were affected by a small Hymenopterous parasite.

**Melanoxanthus salicis** (L.).

This species occurred commonly about Hanover during the Autumn of 1892. The form, color and habits were precisely like those observed in Ohio, except that wingless males—a form not before found, were rather common.

*Wingless Male*.—Body 2.4 mm. long; 1 mm. wide; antennæ 1.5 mm. long. Body flattened, elongate, and with legs and antennæ very hairy. Dorsum bluish black, with more or less glaucous bloom, and a faint indication of a whitish, central, longitudinal marking, and a row of indistinct white dots along dorsal margin at each side of abdomen. In some specimens dorsum of head and thorax, slightly tinged with brown. Basal half of antennæ brown, the rest black; eyes black; cornicles orange-yellow, paler at base and tip; ventrum drab-brown, darker toward cauda. Legs russet-brown, with coxæ unicolorous with ventrum, with tips of femora (especially in last pair) and tibia together with all of tarsi, blackish; rostrum drab-brown at base, dusky toward tip. Third joint of antennæ longest, but much shorter than joint iv plus v, the latter being subequal; vi and vii also subequal, the two together being about as long as v. Third joint with many pores; a well-developed tubercle on each side of the prothorax.

Described from many living specimens, one of which was seen *in copula* with an oviparous female, taken on *Salix* at Hanover, N. H., October, 1892.

**Melanoxanthus flocculosus** Weed.

A few colonies of this species were found upon willow in Hanover. The wingless male was common in October. It may be described as follows:

*Wingless Male*.—Body 2.8 mm. long; 1 mm. wide; antennæ 2 mm. long. Body long, slender, flattened; its sides parallel from mesothorax to base of cornicles; flocculent, especially on ventrum and dorsal margins of abdomen; a distinct margin on each side reaching from mesothorax to end of abdomen. General

color dull yellowish brown, with a longitudinal row of large, quadrangular, black spots on each side of dorso-meson, and a row of less distinct black spots along each margin; on head and prothorax these spots so run together that they are usually not distinguishable from each other; eyes black; cornicles orange, or orange-yellow, usually paler at the base, slightly expanding from base to near tip, and then contracting to an obtuse point; not flanged at tip. Antennæ long, slender, black; joint three longest, but shorter than four plus five, the latter being subequal; the proximal and distal parts of six subequal, the whole joint being as long as five. Cauda short, obtusely rounded at tip. Legs long, black, with base of femora yellowish brown. A very small pointed tubercle on each side margin of prothorax; sometimes obsolete. Antennæ and legs sparsely furnished with short hairs.

Described from several living and dead specimens taken on *Salix* Oct. 28, 1892. Some of the specimens were *in copula* with oviparous females.

**Lachnus strobi** Fitch.

A number of young white pines infested by this species were found at Hanover during the Autumn of 1892. The forms present were the winged males, the wingless oviparous females and the eggs. The habits and conditions were precisely the same as observed in Ohio, and reported in the fifth of this series of contributions.

**Pemphigus imbricator** (Fitch).

This species, originally described by Dr. Fitch as *Schizoneura imbricator*, was rather common on beech trees in the vicinity of Columbus during the Autumn of 1890. Infested twigs look, at little distance, as if covered on the underside with wool or cotton, on account of the long cottony secretion with which the insects are furnished. The wingless forms and nymphs are especially provided with this substance. When a colony is disturbed each aphid emits a small drop of "honey-dew" and the nymphs begin waving their abdomens back and forth. Late in October and early in November the only forms present, so far as my observations went, were winged viviparous females, and nymphs of the same. I was unable to determine the method of hibernation.

*Winged Viviparous Female*.—Body 4 mm. long by 1.5 mm. wide across abdomen. Head to tip of folded wings 7 mm. Wing expanse 13 mm. antennæ 1.1 mm. Head and thorax black, with more or less brown between articulations, especially on ventral surface. Abdomen yellowish, or greenish brown, with an olive-green vase-shaped marking on middle of dorsum, and a longitudinal marking of same color near each margin, the latter often uniting posteriorly by a faint curved transverse line as shown in the figure. Legs piceous, except bases of femora, which are sometimes brown. Antennæ piceous; joint iii equal to iv plus v,

which are subequal; vi, longer than v, with the thumb-like tip very short. Rostrum reaching second coxæ. Wings hyaline; radius and stigma piceous, other veins brown.

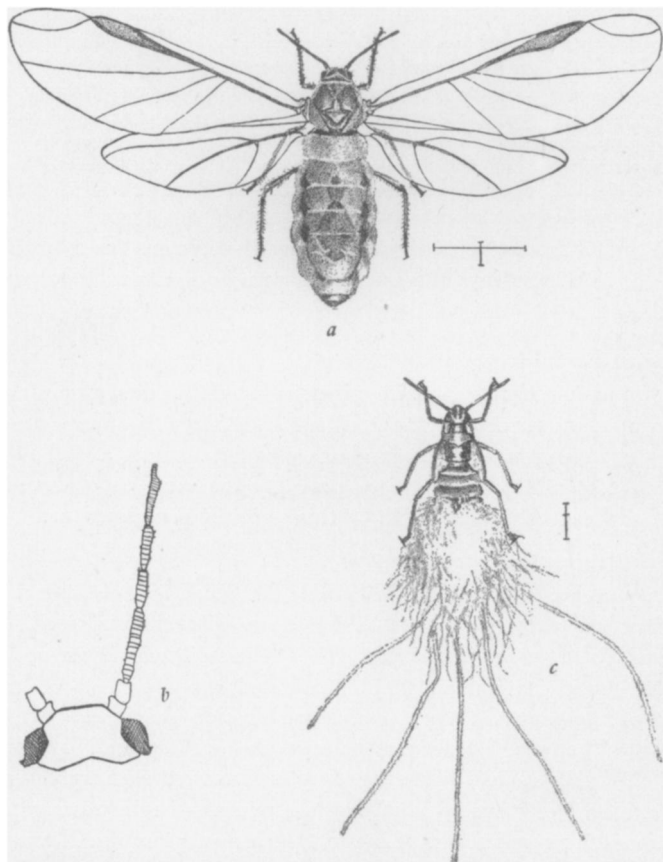


Fig. 2.—**Pemphigus imbricator**: *a*, winged viviparous female; *b*, head and antenna of same; *c*, nymph of same. All magnified.

Described from many living specimens on limbs of *Fagus ferruginea*, Autumn, 1890.

**Phyllaphis** sp. (on beech).

During the Autumn of 1890 I found a species of *Phyllaphis* on beech in central Ohio, the oviparous form of which agrees with Buckton's short description and figure of *P. fagi*. I presume that it is that species, but do not think the present evidence justifies a definite reference to that effect. The colonies were found on the underside of the leaves, with more or less flocculent matter about them. The sexed forms developed during October, and the oviparous females wandered over the bark of the twigs, limbs, and trunk in search of crevices in which to deposit their eggs. When a suitable

place is found the egg is laid, and then driven into position by the following method: The insect so places itself that its hind legs easily touch the egg, then standing on its four front ones it brings the two hind ones down upon the egg in rapid succession, striking with considerable force. This serves the double purpose of pushing the egg in place, and of drawing out a viscid secretion, with which it is covered, into a thread-like, silvery film, that so resembles the surrounding bark that it is difficult to detect it. I watched an oviparous louse go through this process for about a minute and a half.

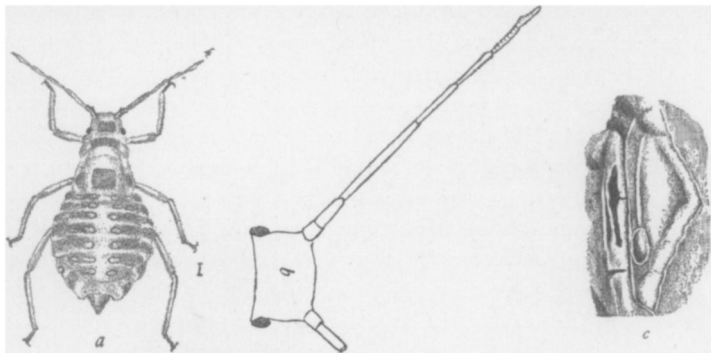


Fig. 3.—*Phyllaphis* of beech: *a*, oviparous female, magnified; *b*, head and antenna of same, greatly magnified; *c*, egg on bark, magnified.

*Oviparous Female*.—Body 2.4 mm. long by 1 mm. wide across abdomen. Antennæ 1.2 mm long. Body elongate, somewhat pyriform and flocculent. General color pale green; a large quadrangular spot on the dorsum of head and prothorax, three spots on mesothorax, and six spots on the dorsum of each of the seven anterior abdominal segments, and three spots on eighth abdominal segment, olive-green. Legs with a slight dusky tinge. Antennæ more markedly dusky, except proximal portion. Eyes reddish; antennæ 6-jointed; joint iii longest; iv, v and vi subequal. Rostrum very short, scarcely reaching second coxæ. Body sparsely provided with spatulate or capitate hairs. Cauda short, globular.

*Egg*.—Small, only 0.6 mm. long. Greenish when first laid, but becoming dark gray, very much the color of the beech bark; covered with a filmy substance that helps to conceal it.

Deposited in crevices of bark.

***Schizoneura tessellata* Fitch.**

This species, commonly known as the woolly alder *aphis*, has been extremely abundant in New England during recent years. Its Winter history seems never to have been precisely determined. My observations upon it began in October, 1891, at Hanover. At that time great numbers of young were being born from the colonies of oviparous females present on the twigs. During the latter part of the month and throughout the early part of November these young did not remain on the twigs, but wandered down the trunk to the soil surface. Here they congregated in enormous colonies in the



crevices between the base of the trunk and larger roots and the soil, or beneath the fallen leaves or other rubbish at the soil surface. Here they remained until Spring, when they took advantage of the first warm days to crawl up the trunk to the twigs. So early as April 9th I found that large numbers had already established colonies on the twigs, the pulverulence developing so that many of them had a distinct coating of white. The afternoon of the 9th was cold, and a very few of the young lice were seen ascending the alder stems. There were a great many yet remaining in the rubbish. I made another observation a week later (April 16th), the afternoon being warm and sunny. Many of the young aphids were then ascending the alder stems; nearly all were headed away from the roots, but occasionally one was going sideways, and rarely one was turned toward the roots. Many were yet below, especially where the base of the stems were thickly covered with fallen leaves. The colonies were numerous on the young twigs, but there were none on the old ones.

Enormous numbers of these young lice must be washed away by the falling rains and melting snow. I found many of them among the stones along a brook, often on the undersides of the stones in the nests of ants (*Lasius*) with *Dactylopius* and the eggs of aphides, but the ants paid no attention to the young *Schizoneuras*.

The dead Autumn colonies are almost as conspicuous in Spring as they were the previous Autumn.

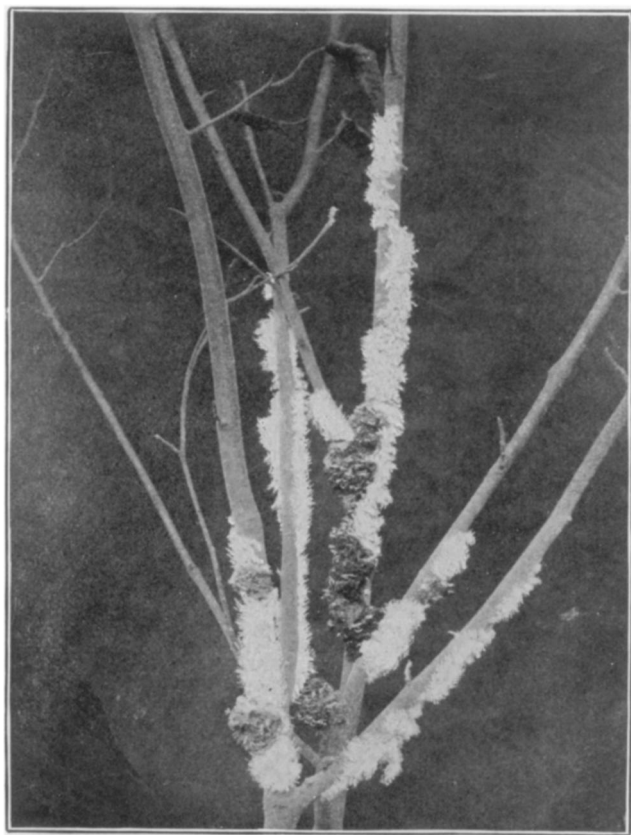
The young as it comes out of Winter quarters in early Spring may be described as follows:

*Young in Spring*.—Body 1.2 mm. long; 0.7 mm. wide. General color olive-green, with tips of antennæ, tip of rostrum and claws, blackish. Body, including legs and antennæ, thickly furnished with rather long, stiff hairs, having recurved tips. Six longitudinal rows of pulverulent spots on abdomen, running together on last two segments. Similar spots on head and thorax, but in less distinct rows. The size and amount of pulverulence varies considerably, those on the borders of having less, thus indicating more recent arrival from below.

The adult viviparous female which in Autumn gives birth to the hibernating form is described as follows:

*Apterous Viviparous Females*.—Body 5 mm. long, 3 mm. wide. Body pear-shaped; abdomen large and swollen; color lead-gray throughout; antennæ light grayish brown, sometimes with a greenish tinge, and terminal joint dusky. Legs brown, with tips of joints black. Antennæ very short; joints iii, iv and v swollen on posterior side; third joint nearly twice as long as second; fourth very short, less than half as long as third; fifth short, a very little longer than third. Segmentation of abdomen very distinct. Rostrum short, robust. Dorsum furnished with a long pulverulent coating.

I put a number of specimens of this form in empty vials October 17th, and during the next five days one of them gave birth to forty young. The appearance of a branch infested by these insects and the fungus which accompanies them is shown on Plate VII.



SCHIZONEURA TESSELLATA Fitch.